taking a statistically-based sampling of said plurality of defects to produce a plurality of N sampled defects, N being a sample number; and

performing an inspection of each of said N sampled defects to produce summary information representative of results of said inspection of each of said N sampled defects.

2. The method of claim 1 further including receiving user-provided information comprising one or more statistical criteria, wherein said sample number N is a computed number resulting from one or more computations made based on said statistical criteria.

3. The method of claim 1 further including receiving user-provided information comprising one or more statistical criteria, wherein said sample number is produced by a table look-up of one or more data tables.

4. The method of claim 1 further including receiving user-provided information comprising one or more statistical criteria, wherein said sample number is produced by a combination of one or more computations made based on said statistical criteria and a table look-up of one or more data tables.

5. The method of claim 1 wherein said one or more statistical criteria comprise a reliability value and an allowable error value and said step of taking a statistically-based sampling includes randomly sampling N defects from said plurality of defects.

6. The method of claim 1 wherein said one or more statistical criteria comprise a reliability value and a dominant defect percentage value and said step of taking a statistically-based sampling includes randomly sampling N defects from said plurality of defects.

7. The method of claim 1 wherein said defect information is further representative of one or more clusters of said defects, said user-provided information further being representative of one of said one or more clusters, said step of sampling taking a statistically-based being performed on said one of said one or more clusters.

8. The method of claim 7 wherein said one or more clusters of said defects are classified based on density of defects.

9. The method of claim 1 wherein said step of receiving defect information includes performing a first inspection of said semiconductor wafer, said first inspection identifying the presence of a defect.

10. The method of claim 1 wherein said summary information includes first information indicative of clusters of said defects on said semiconductor wafer, second information indicative of a dominant defect in each of said clusters, and third information indicative of a distribution of different kinds of defects in each of said clusters, said method further including presenting said first information, one or more portions of said second information, and one or more portions of said third information.

11. A method for inspecting semiconductor wafers comprising:

receiving defect data representative of defects on a semiconductor wafer;

receiving one or more user-provided statistical criteria;

producing one or more sampling criteria based on said statistical criteria;

taking a sample of said defect data based on said sampling criteria to produce a set of sampled data; and

inspecting each defect on said semiconductor wafer contained in said set of sampled data to produce review data.

12. The method of claim 11 wherein said step of receiving one or more user-provided statistical criteria includes presenting one or more data entry areas to a user and receiving information from said user indicative of said one or more statistical criteria.

13. The method of claim 12 wherein said step of presenting includes producing a graphical user interface on a display, said graphical user interface comprising one or more graphical elements effective for prompting a user to provide said one or more statistical criteria.

14. The method of claim 11 wherein said one or more statistical criteria include a reliability value, said step of receiving one or more user-provided statistical criteria including presenting a data entry area to a user and receiving data from said user indicative of said reliability value.

15. The method of claim 11 wherein said defect data is further representative of one or more clusters of said defects, said method further including receiving user-provided information representative of one of said one or more clusters, said step of taking a sample being performed on said one of said one or more clusters.

16. The method of claim 11 wherein said review data includes first information representative of clusters of defects on an inspected semiconductor wafer, second information indicative of a major defect mode in each of said clusters, and third information representative of a distribution of each of one or more kinds of defect in each of said clusters, said method further including presenting said first information and said second information, and receiving user-provided information indicative of one of said clusters, and in response thereto presenting a portion of said third information relating to a distribution of each kind of defect in said one of said clusters.

17. The method of claim 16 wherein said presenting said first and second information include presenting images of one or more portions of said inspected semiconductor wafer.

18. The method of claim 16 further including producing review data for a plurality of inspected semiconductor wafer, receiving user-provided information representative of one of said inspected semiconductor wafers, and in response thereto presenting first information of said one of said inspected semiconductor wafers.

19. The method of claim 16 wherein said steps of presenting include producing graphical elements on a display.

20. In a semiconductor wafer inspection system, a method for providing a user interface for making an inspection of a semiconductor wafer, said semiconductor wafer having a plurality of defects, at least some of said defects forming one or more clusters, the method comprising:

presenting one or more first information reception areas for receiving information relating to statistical criteria;

presenting one or more second information reception areas for receiving information indicative of a selection of one or more of said clusters; and

receiving first sampling information or second sampling information,

said first sampling information comprising first statistical criteria,

said second sampling information comprising one or more user-selected clusters, each user-selected cluster having associated second statistical criteria,

wherein if said first sampling information is received, a statistically-based sampling of first defects from said plurality of defects is made based on said first statistical criteria and an inspection is made on each of said first defects.

wherein if said second sampling information is received, a statistically-based sampling of second defects from each user-selected cluster is made based on its

associated second statistical criteria and an inspection is made on each of said second defects.

21. In a semiconductor wafer inspection system, a method for providing a user interface for presenting review information produced from an inspection of one or more defects taken from a plurality of defects on a semiconductor wafer, at least some of said defects forming one or more clusters, the method comprising:

receiving user-provided information indicative of a selected semiconductor wafer comprising one of a plurality of semiconductor wafers;

presenting first information indicative of said selected semiconductor wafers;

presenting second information indicative of a first set clusters comprising one or more of said clusters, said second information further indicative of a dominant defect kind for each cluster in said first set of clusters; and

presenting third information indicative of a selected cluster comprising a cluster in said first set of clusters including information relating to defects comprising said selected cluster,

said second information and said third information comprising portions of said review information, said review information comprising information of inspections of defects from a statistically-based sampling of said defects.

22. The method of claim 21 further including receiving user-provided information indicative of a second set of clusters comprising one or more of said clusters and presenting fourth information indicative of said second set of clusters.

23. Canceled.

24. Canceled.

25. A wafer inspection and review system comprising:

an inspection apparatus for performing inspections on a semiconductor wafer, said inspection apparatus producing wafer defect information indicative of defects detected on said semiconductor wafer;

a review apparatus for performing additional inspections on said semiconductor wafer, said review apparatus producing review information indicative of results of said additional inspections; and

a sampling function unit operable to produce a statistically-based sample of defects from said wafer defect information, said additional inspections being made on said statistically-based sample of defects.

26. The system of claim 25 further including an input unit configured to exchange information with a user to obtain user-provided information comprising statistical criteria, said sampling function unit producing said statistically-based sample of defects based on said statistical criteria.

27. The system of claim 26 wherein said statistical criteria include a reliability value and either an allowable error value or a dominant defect percentage value.

28. The system of claim 26 wherein said wafer defect information is further indicative of clusters of said defects on said semiconductor wafer, said user-provided information further comprising information indicative of one of said clusters, wherein said statistically-based sample of defects comprise defects from said one of said clusters.

29. The system of claim 25 wherein said review information includes first information indicative of clusters of said defects on said semiconductor wafer, second information indicative of a dominant defect in each of said clusters, and third

information indicative of a distribution of different kinds of defects in each of said clusters, said system further including an output unit configured to present said first information, one or more portions of said second information, and one or more portions of said third information.

30. A semiconductor wafer inspection system comprising:

means for storing defect information relating to a plurality of defects on a semiconductor wafer;

means for receiving user-provided information including one or more statistical criteria;

means for producing a sample number (N) based on said one or more statistical criteria;

means for sampling said defect information to produce N sampled defects; and

means for inspecting each of said sampled defects to produce review information.

31. The system of claim 30 wherein said defect information further includes cluster information relating to one or more clusters of defects on said semiconductor wafer, said user-provided information including a cluster selection identifying one of said clusters of defects, said N sampled defects are sampled from defects located in said one of said clusters of defects.

32. The system of claim 30 wherein said review information includes first information representative of clusters of defects on an inspected semiconductor wafer, second information indicative of a major defect mode in each of said clusters, and third information representative of a distribution of each of one or more kinds of defect in each of said clusters, said system further including first means for presenting said first information and said second information, second means for receiving user-provided

information indicative of one of said clusters, and second means presenting, in response to said second means for receiving, a portion of said third information relating to a distribution of each kind of defect in said one of said clusters.

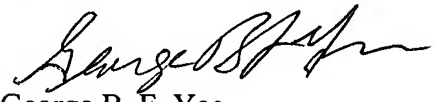
33. The system of claim 32 wherein means for inspecting produces review data for a plurality of inspected semiconductor wafers, said system further including means for third means for receiving user-provided information representative of one of said inspected semiconductor wafers.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 650-326-2400.

Respectfully submitted,



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